

Problem Majorat

Input file `stdin`
Output file `stdout`

You are given a positive integer K . Construct a sequence that has exactly K subsequences, not necessarily disjoint, each admitting a majority element.

An element is considered a majority in a sequence of N numbers if it appears at least $\lfloor \frac{N}{2} \rfloor + 1$ times.

The elements of the sequence must be positive integers between 0 and the length of the sequence (inclusive).

Any sequence whose length belongs to the interval $[LOW, HIGH]$, where LOW and $HIGH$ are specified in the problem constraints, is considered correct and will be scored accordingly.

You need to solve the problem for T scenarios.

Input Data

The first line of the input file contains the number T . The next T lines each contain a positive integer K , as described in the statement.

Output Data

The output file will contain the solution for each of the T scenarios. For each scenario, two lines will be displayed in the following format:

The first line will contain the length of the found sequence. The second line will contain the elements of the sequence, separated by a space.

Restrictions

- $1 \leq K \leq 1\,000\,000\,000$.
- For sequences with a length less than or equal to LOW , the maximum score will be awarded.
- For sequences with lengths in the interval $[LOW + 1, HIGH]$, between 20 and 80 percent of the score will be awarded according to the formula $\frac{80 \cdot (HIGH - N) + 20 \cdot (N - LOW)}{HIGH - LOW}$.
- For sequences longer than $HIGH$, zero points will be awarded.
- In a test case, the final score is the minimum obtained across all T scenarios.
- It is guaranteed that a solution always exists that satisfies the problem constraints.
- $1 \leq \sum HIGH \leq 10^7$

#	Points	Restrictions
1	30	$1 \leq K \leq 10^3, LOW = 200, HIGH = 10^3$.
2	30	$1 \leq K \leq 10^7, LOW = 1.3 \cdot 10^4, HIGH = 10^5$
3	40	$1 \leq K \leq 10^9, LOW = 1.3 \cdot 10^5, HIGH = 10^6$

Examples

Input file	Output file
1	2
2	0 1
2	3
5	1 0 0
2	2
	1 2

Explanations

For the first example, for the sequence $\{0, 1\}$, the subsequences are: $\{0\}$ and $\{1\}$.

For the second example, for the sequence $\{1, 0, 0\}$, the subsequences are: $\{1\}$, $\{0\}$, $\{0\}$, $\{0, 0\}$, and $\{1, 0, 0\}$. For the sequence $\{1, 2\}$, the subsequences are: $\{1\}$ and $\{2\}$.